

WHAT IS CLAIMED IS:

1. A heat exchanger comprising:

- a. a core having a variable size, a first port and a second port;
- b. a support structure; and
- c. a mount positioned between the core and the support structure adjacent the second port, wherein the mount restrains the core such that the core varies in size away from and towards the mount.

2. The heat exchanger of Claim 1, further comprising a deformable connector attached to the core, such that the deformable connector and the first port are in fluid communication as the core varies in size.

3. The heat exchanger of Claim 1, wherein the mount comprises a pin and a receiver, wherein the receiver receives the pin to restrain the core.

4. The heat exchanger of Claim 3, wherein the pin is attached to the support structure and wherein the receiver is defined in the core.

5. The heat exchanger of Claim 3, wherein the pin is attached to the core and wherein the receiver is defined in the support structure.

6. The heat exchanger of Claim 1, wherein the mount comprises a core receiver, a support structure receiver and a pin having a first end and an opposing second end, wherein the core receiver is defined in the core, wherein the support structure receiver is defined in the support structure, and wherein the core receiver receives the first end of the pin and the support structure receiver receives the second end of the pin.

7. The heat exchanger of Claim 4, further comprising a deformable connector attached to the core, such that the deformable connector and the first port are in fluid communication as the core varies in size.

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8. The heat exchanger of Claim 7, wherein the first port is a lower temperature fluid port and the second port is a higher temperature fluid port.
9. The heat exchanger of Claim 8, wherein the deformable connector is selected from the group of a bellows and a flexible hose.
10. The heat exchanger of Claim 2, wherein the first port is a lower temperature fluid port and the second port is a higher temperature fluid port.
11. A heat exchanger comprising:
 - a. a laterally expandable core having a variable size, a lower temperature fluid port and a higher temperature fluid port;
 - b. a support structure;
 - c. a mount positioned between the core and the support structure adjacent the higher temperature fluid port, wherein the mount restrains the core such that the core varies in size laterally away from and towards the mount; and
 - d. a deformable connector positioned such that the deformable connector and the lower temperature fluid port are in fluid communication as the core varies in size.
12. The heat exchanger of Claim 11, wherein the deformable connector is selected from the group of a bellows, a flexible hose and a braided metal hose.
13. The heat exchanger of Claim 12, further comprising a substantially rigid connector positioned such that the deformable connector and the higher temperature fluid port are in fluid communication.
14. The heat exchanger of Claim 13, wherein the mount comprises a pin and a receiver, wherein the receiver receives the pin to restrain the core.
15. The heat exchanger of Claim 14, wherein the pin is attached to the support structure and wherein the receiver is defined in the core.

16. The heat exchanger of Claim 14, wherein the pin is attached to the core and wherein the receiver is defined in the support structure.
- 5 17. The heat exchanger of Claim 12, wherein the mount comprises a core receiver, a support structure receiver and a pin having a first end and an opposing second end, wherein the core receiver is defined in the core, wherein the support structure receiver is defined in the support structure, and wherein the core receiver receives the first end of the pin and the support structure receiver receives the second end of the pin.
- 10 18. The heat exchanger of Claim 15, wherein the pin is attached to the support structure by one from the group of a weld, a brazing and an adhesive.
- 15 19. The heat exchanger of Claim 15, wherein the pin is formed with the support structure.
20. A recuperator comprising:
- 20 a. a laterally thermally expandable core having a variable size, a core inlet and a core outlet;
- 25 b. a support structure having a shell with opposing ends, a upper strongback, a lower strongback, a set of tie rods, wherein the core is received in the shell, wherein the upper strongback and lower strongback are positioned on the opposing ends of the shell, wherein the upper strongback and the lower strongback are connected with the set of tie rods;
- 30 c. a mount positioned between the core and the support structure adjacent the outlet of the core, wherein the mount comprises a pin and a receiver, wherein the pin is attached to the support structure and wherein the receiver is defined in the core, wherein the receiver receives the pin to restrain the core, wherein the mount restrains the core such that the core varies in size laterally away from and towards the mount; and

- d. a deformable connector attached to the core inlet such that the deformable connector and the core inlet are in fluid communication as the core varies in size.

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